

[illegible]

Typing Things in: In the instructions below, YOU type everything which is underlined, the computer types everything else. The symbol «- means that you push the key that has that "bent arrow" shape on it. It's called the "return" or "enter" key, and its located on the right side of the keyboard, just above the key that says "PrtSc". Example: A>LOGIC«- means that the computer types "A>", you type "LOGIC" and then press the return key. Whenever you make a typing mistake, you can correct it before you press the return key by pressing the "backspace" key. This key is located above the return key on the keyboard, and it has a left-facing, unbroken arrow on it.

Using Menus: Most choices in the Proof Tutor modules are made by means of "Menus", which offer you a specific list of possible actions to choose from at each point in the program. You will encounter two types of menus. One will offer a list of numbered selections. Simply type the number listed to the left of the item you have chosen. The second type menu allows you to select problems or actions by moving a lighted bar on the screen. Use the up and down arrow keys (on the right on the keyboard) to move the lighted bar to the item you select and press the return key to register your selection. In the case of menus that select problems to do, the menu will indicate which problems you have already done and automatically position the lighted bar over the lowest numbered problem not yet done. You may also operate "light bar" menus by typing the first (left-most) letter of the entry you want. E.g., type V to select Valid.

Logical Notation: Since the PC keyboard doesn't have all the usual logic symbols, we use the follow symbols to enter symbolic statements into the computer:

ENGLISH TERM	USUAL SYMBOL	COMPUTER REPLACEMENT	WHAT TO TYPE
and	.	.	. or ;
or	v	v	v or V
not	~	~	~ or `
if...then	⊃	>	> or ,
if and only if	≡	≡	=
left parenth	(((or [
right parenth))) or]

"One Finger" Typing: If you are not a touch typist, you can enter all statements with a single finger, without even touching the "shift" keys. To do this, use the following special keys:

type [for (
type]	for)
type , (comma)	for >
type ` (single quote)	for ~
type V	for v
type ;	for .

Whenever you are asked to enter a statement, the computer will edit the statement as you type it, indicating errors with a beep and an explanatory message. Use the "backspace" key to erase the erroneous character(s), then retype the rest of the statement correctly.

THE TRANSLATION TUTOR

After you have made a working disk, you may start the translation module by putting your working copy

```

+)))Probs)),+))))))Dictionary))))))
*1          **      A :   Al runs daily                               *
*2          **      B :   Barbara runs daily                         *
*3          **      C :   Carl watches the kids                     *
*4          **      D :   Debra will be late for work                *
*5          **                                              *
*6          **                                              *
*7          *.)))))))))))))))))))))))))))))))))))))))))))-
*8          *+))))))))))))))))))))Instructions))))))))))))))))),
*9          **
*10         **Move Light Bar with Arrow Keys, Use Enter Key to Pick Problem*
**MORE PROBS**Type Symbolic Translation in Box Below.  If Incorrect, Com- *
**QUIT      **pare Your Translation with Original English and Try Again.  *
.)))))))-.)))))))))))))))))))))))))))))))))))))))))))-
+)))Grammar Mistakes))),+))))))))))))Statement Input))))))))),
*
*          **A.~B
.))))))))))))))))))))-.)))))))))))))))))))))))))))))))))))))-
+))))))Current Problem in English)))))))+))))Your Translation))))),
*
*          **
*Al runs daily, but Barbara doesn't.          ** (A.~B)  OK!
.))))))))))))))))))))-.)))))))))))))))))))))-

```

Entering Translations: After you select a problem number, the program will type the English sentence for you to translate in the box on the lower left. You will then be asked to type your translation in the box in the center right of the screen. If you make grammatical mistakes, an error message will appear in the small box to the left of center.

Many symbolic statements will have more than one English equivalent, so the program will ask if you want to see more translations. If you type "N" or just press the return key, you may try the problem again or select another one. If you type "Y", you will be shown a list of all the alternative English versions of your statement that the translation module can produce.

When you have finished all the problems you want to try in the first problem set, press "M" to select a second set of problem, or press "Q" to and then "Y" to finish your translation session.

THE TRUTH TABLE TUTOR MODULE

After you pick a problem, the program will draw the skeleton of a truth table on the screen, with the conclusion on the right, as follows:

```

+)Values, +Row, +))))))Prem 1))))), +))))))Prem 2))))), +))))Conclusion))),
* A   B **   **           A>B           **           A           **           B           *
*           **   **           **           **           **           **           *
* T * T ** 1 **           **           **           **           **           *
* T * F ** 2 **           **           **           **           **           *
* F * T ** 3 **           **           **           **           **           *
* F * F ** 4 **           **           **           **           **           *
.)))))-.))-.)))))-.)))))-.)))))-.)))))-.)))))-.)))))-.)))))-.)))))-.)))))-.

```

This truth table is for the argument:

```

A > B
A
-----
B

```

Each statement is the label for a column of truth values (T's or F's). The idea of the table is to check if it is possible for all the premises to be true and the conclusion false for any assignment of T or F values to the letters in the argument. If there is a row in the table where all premise are T and the conclusion F, then the argument is INVALID, otherwise, it is VALID.

Your task is to fill in enough entries in the table to determine whether the argument is valid or not. You fill in entries by (a) moving to the right spot using the up, down, left, or right arrow keys on the right of the keyboard, and (b) typing a "T" or an "F" in the right spots. When you calculate truth value of a premise or conclusion on a particular row, you use the truth values of the letters indicated on the left end of the row. For example, if you fill in the third row entry under the column for the first premise $A > B$, use the truth values F for A and T for B, which are listed on the third row in the values box. If you know the truth table for '>', you can then calculate T as the truth value for $A > B$, and enter it on the third row under $A > B$.

When you are satisfied with your entries in the table, press the enter key. You will have to wait a few seconds while the program checks all your entries. If any entries are incorrect, their row numbers (counting the top row as number one) will be listed in the upper left corner. Correct the errors and press enter again. If you fill in the table for our example completely in this way, it will look as follows:

```

+)Values, +Row, +))))))Prem 1))))), +))))))Prem 2))))), +))))Conclusion))),
* A   B **   **           A>B           **           A           **           B           *
*           **   **           **           **           **           **           **           *
* T * T ** 1 **           T           **           T           **           T           *
* T * F ** 2 **           F           **           T           **           F           *
* F * T ** 3 **           T           **           F           **           T           *
* F * F ** 4 **           T           **           F           **           F           *
.)))))-.))-.)))))-.)))))-.)))))-.)))))-.)))))-.)))))-.)))))-.)))))-.)))))-.

```

Once you have corrected all errors, a small menu will appear on the center of the screen. If you think the argument is valid, move the lighted bar to the "Valid" line and press enter. The program will check your answer. If the table does not show validity, you will be told the number of one line (not necessarily the only one) which would not be complete or correct in a valid table. That is, the indicated line will lack either a false premise or a true conclusion. Select the "Fix Table" entry in the menu, press enter, and modify the table as necessary until you think it is O.K. Press enter and try again. If you want to quit the problem before all entries are correct, press the Esc key.

The instructions for the "Invalid" option are similar, except that you will be asked for the number of a row which shows invalidity. This row must have all premises true, and the conclusion false. If you are correct, you will be sent back to the large menu to choose another problem. If not, fix the table and try again. Notice that it is not usually necessary to fill in every entry in table in order to discover whether the argument is represents is valid or not. When you are finished, select the Quit option from the menu.